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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/455,955	12/07/1999	BRADLEY CAIN	2204/184-(BA	5780

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EXAMINER
DUONG, DUC T

ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 09/24/2003   *11*

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

		Application No.	Applicant(s)
Office Action Summary		09/455,955	CAIN, BRADLEY
		Examiner	Art Unit
		Duc T. Duong	2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _11 July 2003_ .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-31_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-31_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____ .

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

   a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6)☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S. C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-2, 4-10, 12-18, 20-25, and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over an applicant's admitted prior art (Fig. 3) in view of "Internetworking with TCPIIP" by Douglas E. Comer.

Regarding claim 1, as shown in Fig. 3, an applicant's admitted prior art teaches link state information (LSA protocol messages), a node (102), a neighbor (106), a communication system (node 102 communicates to neighbor 106 via link 104), a link state advertisement protocol message (LSA), an acknowledgement message (ACK), and sending a first link state advertisement protocol message to the neighbor (LSA (1) is sent from node 102 to the neighbor 106).

However, an applicant's admitted prior art fails to teach sending a second LSA protocol message to the neighbor prior to receiving an acknowledgement message from the neighbor for the first LSA protocol message.

As shown in Fig. 12.4, Comer teaches sending a second packet (packet 2) to the receiver prior to receiving an acknowledgement message (ACK 1) from the receiver for thefirstpacket.

Given the teaching of Comer, it would have been obvious to one skilled in the art at the time the invention was made to incorporate sending a second packet to the receiver prior to receiving an acknowledgement message from the receiver for the first into the method of an applicant's admitted prior art by allowing the node to transmit multiple LSA protocol messages before waiting for an acknowledgement message for delivery reliability and a more efficient use of network bandwidth (Comer, pg. 175, paragraph 2, lines 2-3 - pg. 176, paragraph 176, line 1).

Regarding claim 4, as shown in Fig. 3, an applicant's admitted prior art teaches distributing link state information (LSA protocol messages), a node (102), a neighbor (106), a communication system (node 102 communicates to neighbor 106 via link 104), link state advertisement protocol messages (LSAs), and an acknowledgement message (ACK).

However, an applicant's admitted prior art does not teach maintaining a sliding window, sending the predetermined maximum number of LSA messages to the neighbor, and waiting for an acknowledgement message for at least one of the LSA protocol messages before sending another LSA protocol message.

Comer teaches maintaining a sliding window for sending up to a predetermined maximum number (window size) of packets to the receiver (pg. 176, lines 6-9), wherein the predetermined maximum number is greater than one (window size 8, pg. 176, lines 8-9), sending the predetermined maximum number of packets to the receiver (Fig. 12.3 (a) and pg. 176, lines 10- 12), and waiting for an acknowledgement message from the receiver for at least one of the packets before sending another packet (it is inherent that

the sender has to wait for an acknowledgement for packet I from the receiver before

sending packet 9, Fig. 12.3 and pg. 176, lines 10-12).

Given the teaching of Comer, it would have been obvious to one skilled in the art

to incorporate maintaining a sliding window for sending up to a predetermined maximum

number of packets to the receiver, wherein the predetermined maximum number is

greater than one, sending the predetermined maximum number of packets to the

receiver, and waiting for an acknowledgement message from the receiver for at least

one of the packets before sending another packet into the method of an applicant's

admitted prior art by allowing the node to transmit LSA protocol messages up to a

predetermined maximum number before waiting for an acknowledgement message for

delivery reliability and a more efficient use of network bandwidth (Comer, pg. 175,

paragraph 2, lines 2-3 - pg. 176, paragraph 176, line 1).

Regarding claim 7, as shown in Fig. 3, an applicant's admitted prior art teaches

link state information (LSA protocol messages), a communication network (node 102

communicates to neighbor 106 via link 104), link state advertisement protocol

messages (LSAs), and an acknowledgement message (ACK).

However, an applicant's admitted prior art does not teach a sliding window

mechanism, a window size greater than one, and a predetermined maximum number.

Comer teaches a sliding window mechanism (section 12.5), a window size greater than

one (window size 8, pg. 176, lines 6-9), and a predetermined maximum number

(window size, pg. 176, lines 6-9).

Therefore, it would have been obvious to one skilled in the art to incorporate the teachings of Comer into the device of an applicant's admitted prior art to allow the device to send LSA protocol messages up to a predetermined maximum number without receiving an acknowledgement message for any of the LSA protocol messages for a more efficient use of network bandwidth (Comer, pg. 175, paragraph 2, lines 2-3 - pg. 176, paragraph 176, line 1).

Claim 15 is a program product claim corresponding to device claim 7, and is rejected for the same reason set forth in rejection of claim 7 with the addition that an applicant's prior art does not teach a computer readable medium, and a computer program.

However, it would also have been obvious to one skilled in the art to include a computer readable medium and a computer program into the claimed program product because one skilled in the art would want to perform the claimed functions automatically by executing a computer program that implements an end-to-end flow control of the LSA protocol messages using a sliding window mechanism and have such program installed in a computer readable medium, for example a diskette as known in the art, for convenience and portability purposes.

Claim 23 is a system claim corresponding to device claim 7, and is rejected for the same reason set forth in rejection of claim 7 with the addition that an applicant's prior art (Fig. 3) also teaches a node (102) and a neighbor (106).

Regarding claim 30, as shown in Fig. 3, an applicant's admitted prior art teaches distributing of LSA protocol messages, which are part of a link state routing protocol as known in the art, using a stop-and-wait protocol.

However, an applicant's admitted prior art fails to particularly teach a sliding window mechanism.

Comer teaches a sliding window mechanism (section 12.5).

Given the teaching of Comer, it would have been obvious to one skilled in the art to use a sliding window mechanism in a link state routing protocol instead of a stop-and-wait in order to achieve a more efficient use of network bandwidth (Comer, pg. 175, paragraph 2, lines 2-3 - pg. 176, paragraph 176, line 1),

Per claim 2, an applicant's admitted prior art does not teach monitoring for an acknowledgement message for the first LSA protocol message, failing to receive an acknowledgement message for the first LSA protocol message within a predetermined timeout period, and retransmitting the first LSA protocol message.

However, Comer teaches monitoring for an acknowledgement message (ACK) for the first packet (a sliding window keeps track of the acknowledgements, pg. 177, paragraph 1, lines 1-2), failing to receive an acknowledgement message for the first packet within a predetermined timeout period (a timer) (a packet is lost or unacknowledged when the timer expires, pg. 176, lines, 5-6 and pg. 177, paragraph 1, lines 2-3), and retransmitting the first packet (the packet is retransmitted if it is lost or unacknowledged when the timer expires, pg. 177, paragraph 1, lines 2-3).

Per claim 5, an applicant's admitted prior art fails to teach receiving the acknowledgement message for a first LSA protocol message, and sending at least one more LSA protocol message.

However, Comer teaches receiving the acknowledgement message from the receiver for a first packet (Fig. 12.3 and pg. 176, lines 10- 12), and sending at least one more packet (packet 9 is sent following a receipt of an acknowledgement of packet 1, Fig. 12.3 and pg. 176, lines 1012).

Per claim 6, an applicant's admitted prior art fails to teach failing to receive the acknowledgement message from the neighbor within a predetermined timeout period, and retransmitting at least a first unacknowledgement LSA protocol message. However, Comer teaches failing to receive the acknowledgement message from the receiver within a predetermined timeout period (a timer) (pg. 177, paragraph 1, lines 2-3), and retransmitting at least a first unacknowledgement packet (pg. 177, paragraph 1, lines 2-3).

Per claims 8 and 16, an applicant's admitted prior art (Fig. 3) teaches a neighbor (106) and fails to teach link state distribution logic and sliding window logic. However, it would have been obvious to one skilled in the art to incorporate link state distribution logic and sliding window logic into the claimed device because one skilled in the art would want the claimed device to perform the claimed functions, i.e. generating LSA protocol messages and maintaining a sliding window, automatically by executing the respective link state distribution logic and sliding window logic.

Per claims 9, 17, and 24, an applicant's admitted prior art does not teach sending a first LSA protocol message to the neighbor, and sending a second LSA message to the neighbor prior to receiving an acknowledgement message from the neighbor for the first LSA protocol message.

However, as shown in Fig. 12.4, Comer teaches sending a first packet (packet 1) to the receiver, and sending a second packet (packet 2) to the receiver prior to receiving an acknowledgement message (ACK 1) from the receiver for the first packet.

Per claims 10, 18, and 25, an applicant's admitted prior art does not teach monitoring for an acknowledgement message for the first LSA protocol message and retransmitting the first LSA protocol message upon failing to receive the acknowledgement within a predetermined timeout period.

However, Comer teaches monitoring for an acknowledgement message (ACK) for the first packet (a sliding window keeps track of the acknowledgements, pg. 177, paragraph 1, lines 1-2), and retransmitting the first packet upon failing to receive the acknowledgement message from the receiver for the first packet within a predetermined timeout period (a timer) (the packet is retransmitted if it is lost or unacknowledged when the timer expires, pg. 176, lines, 5-6 and pg. 177, paragraph 1, lines 2-3).

Per claims 12, 20, and 27, an applicant's admitted prior art does not teach sending the predetermined maximum number of LSA protocol messages to the neighbor and waiting for an acknowledgement from the neighbor for at least one of the LSA protocol messages before sending another LSA protocol message.

However, Comer teaches sending the predetermined maximum number of packets to the receiver (Fig. 12.3 (a) and pg. 176, lines 10- 12), and waitingfor an acknowledgement message from the receiver for at least one of the packets before sending another packet (it is inherent that the sender has to wait for an acknowledgement for packet I from the receiver before sending packet 9, Fig. 123 and pg. 176, lines 10-12).

Regarding claim 27, an applicant's admitted prior art does not teach maintaining a sliding window for sending up to a predetermined maximum number of LSA protocol messages to the neighbor. However, Comer teaches maintaining a sliding window for sending up to a predetermined maximum number (window size) of packets to the receiver (pg. 176, lines 6-9).

Per claims 13, 21, and 28, an applicant's admitted prior art fails to teach receiving the acknowledgement message from the neighbor for a first LSA protocol message, and sending another LSA protocol message.

However, Comer teaches receiving the acknowledgement message from the receiver for a first packet (Fig. 12.3 and pg. 176, lines 10-12), and sending another packet (packet 9 is sent following a receipt of an acknowledgement of packet 1, Fig. 12.3 and pg. 176, lines 10- 12).

Per claims 14, 22, and 29, an applicant's admitted prior art fails to teach retransmitting at least a first unacknowledged LSA protocol message upon failing to receive the acknowledgement message from the neighbor within a predetermined timeout period.

However, Comer teaches retransmitting at least a first unacknowledged packet upon failing to receive the acknowledgement message from the receiver within a predetermined timeout period (a timer) (pg. 177, paragraph 1, lines 2-3).

Per claim 31, an applicant's admitted prior art fails to teach open shortest path first routing protocol logic in combination with the sliding window mechanism. It would have been obvious to one skilled in the art to incorporate open shortest path first routing protocol logic in combination with the sliding window mechanism into the claimed link state routing protocol because one skilled in art would want to automatically perform the functions of OSPF which is a like state routing protocol to maintain the topology database as known in the art and using the sliding window mechanism for packet delivery reliability and a more efficient use of network bandwidth by executing the OSPF routing protocol logic in combination with the sliding window mechanism.

3.   Claims 3, 11, 19, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over an applicant's admitted prior art (Fig. 3) in view of "Internetworking with TCP/IP" by Douglas E. Comer and further in view of Sridhar et al. (USPN 6,266,701 B 1).

The combined method of an applicant's admitted prior art and Comer does not teach retransmitting the second link state advertisement protocol message.

However, Sridhar et al. teaches retransmitting the subsequent packets of thefirst lost, damaged, or unacknowledged packet using a Go-Back-N paradigm (after a time-out period, the server retransmits packet 6 and then continues in sequence with the retransmissions of packets 79, col. 3 lines 31-37, 49-67-col. 4, lines 1-6).

Given the teaching of Sridhar et al., it would have been obvious to one skilled in the art at the time the invention was made to incorporate retransmitting the subsequent packets of the first lost, damaged, or unacknowledged packet (retransmitting the second link state advertisement protocol message) into the combined method of an applicant's admitted prior art and Comer to ensure that the first lost, damaged, or unacknowledged packet along with its subsequent packets will be received in sequence at the receiver (the neighbor) as part of error recovery system.

Response to Arguments

4.   Applicant's arguments filed July 11, 2002 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation as mentioned before can be found on Comer, pg. 175, paragraph 2, lines 2-3 - pg. 176, paragraph 176, line 1. Furthermore, Applicant asserting no one recognized that routing protocol packets utilizes significant bandwidth is merely an Applicant's opinion without proof. Therefore, the Applicant's assertion is insufficient to determine no the significant bandwidth utilizes by routing protocol. Thus, based on the reasons set for above, the rejection remains held.

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

- Sabaa et al. (USPN 6389016 131), disclosing a modified version of a sliding window

mechanism. 5. Any inquiry concerning this communication or earlier communications

from the examiner should be directed to Duc Duong whose telephone number is 703-

605-5146. The examiner can normally be reached on Monday through Friday, 9:00 A.M.

6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chau Nguyen can be reached on 703-308-5340. The fax phone numbers for

the organization where this application or proceeding is assigned are 703-746-9408 for

regular communications and 703-827-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

3900.

DD

September 12, 2003

STEVEN H. D NGUYEN
PRIMARY EXAMINER